

1 63. (Cancelled)

1 64. (Previously Presented) The manifold layer according to claim 61 wherein the inlet and
2 outlet passages are arranged in a uniform manner along at least one dimension.

1 65. (Withdrawn) The manifold layer according to claim ~~63~~ ^{CI TMH-18-05} wherein the inlet and outlet
2 passages are arranged in a non-uniform manner along at least one dimension of the third
3 layer.

1 66. (Previously Presented) The manifold layer according to claim 61 wherein the inlet and
2 outlet apertures are separately sealed from one another.

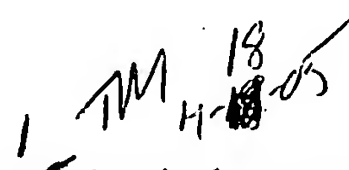
1 67. (Previously Presented) The manifold layer according to claim 61 wherein at least one of
2 the inlet passages has an inlet dimension substantially equivalent to an outlet dimension
3 of at least one outlet passage.

1 68. (Previously Presented) The manifold layer according to claim 61 wherein at least one of
2 the inlet passages has an inlet dimension than an outlet dimension of at least one outlet
3 passage.

1 69. (Currently Amended) A method of manufacturing a heat exchanger configured to cool a
2 heat source, the method comprising the steps of:

- 3 a. forming an interface layer configurable to be in contact with the heat source to
4 pass fluid therethrough, wherein the interface layer includes a micro-porous
5 microstructure disposed thereon;
6 b. forming a manifold layer to include at least one inlet fluid path and at least one
7 outlet fluid path, the at least one inlet fluid path and the at least one outlet fluid
8 path arranged to channel fluid flow an optimal minimum distance therebetween
9 along the interface layer; and
10 c. coupling the manifold layer to the interface layer.

- 1 48. (Original) The heat exchanger according to claim 37 wherein at least one of the first
2 apertures has an inlet dimension different than an outlet dimension of at least one of the
3 second apertures in the plurality.
- 1 49. (Original) The heat exchanger according to claim 33 wherein the interface layer is made
2 of a material having a thermal conductivity of at least 100 W/mk.
- 1 50. (Original) The heat exchanger according to claim 33 wherein the interface layer further
2 comprises a plurality of pillars disposed thereon in an appropriate pattern.
- 1 51. (Original) The heat exchanger according to claim 50 wherein at least one of the plurality
2 of pillars includes at least varying dimension along a predetermined direction.
- 1 52. (Original) The heat exchanger according to claim 50 wherein an appropriate number of
2 pillars are disposed in a predetermined area along the interface layer.
- 1 53. (Original) The heat exchanger according to claim 33 wherein at least a portion of the
2 interface layer has a roughened surface.
- 1 54. (Original) The heat exchanger according to claim 50 wherein the plurality of pillars
2 include a coating thereupon, wherein the coating has an appropriate thermal conductivity
3 of at least 10 W/m-K.
- 1 55. (Canceled)
- 1 56. (Original) The heat exchanger according to claim ~~55~~ wherein the porous microstructure
2 includes at least one pore having a varying dimension along a predetermined direction.
- 1 57. (Original) The heat exchanger according to claim ~~55~~ wherein an average pore size in the
2 porous microstructure is within the range and including 30 microns and 300 microns.
- 1 58. (Original) The heat exchanger according to claim ~~55~~ wherein at least one region of the

- 1 22. (Original) The heat exchanger according to claim 1 wherein the interface layer further
2 comprises a plurality of pillars configured in a predetermined pattern along the interface
3 layer.
- 1 23. (Original) The heat exchanger according to claim 22 wherein at least one of the plurality
2 of pillars includes at least varying dimension along a predetermined direction.
- 1 24. (Original) The heat exchanger according to claim 22 wherein an appropriate number of
2 pillars are disposed in a predetermined area along the interface layer.
- 1 25. (Original) The heat exchanger according to claim 1 wherein at least a portion of the
2 interface layer has a roughened surface.
- 1 26. (Original) The heat exchanger according to claim 22 wherein the plurality of pillars
2 include a coating thereupon, wherein the coating has an appropriate thermal conductivity
3 of at least 10 W/m-K.
- 1 27. (Canceled) 
- 1 28. (Original) The heat exchanger according to claim ~~27~~ wherein the porous microstructure
2 includes at least one pore having a varying dimension along a predetermined direction.
- 1 29. (Original) The heat exchanger according to claim 1 further comprising a plurality of
2 microchannels disposed in a predetermined configuration along the interface layer.
- 1 30. (Original) The heat exchanger according to claim 1 wherein the interface layer is coupled
2 to the heat source.
- 1 31. (Original) The heat exchanger according to claim 1 wherein the interface layer is
2 integrally formed to the heat source.
- 1 32. (Original) The heat exchanger according to claim 1 wherein the heat source is an